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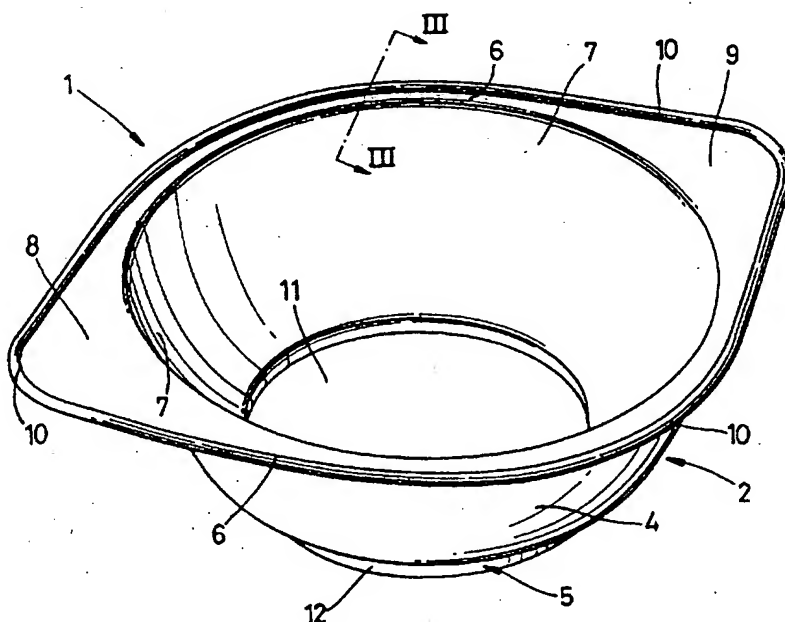
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(54) Title: FOOD CONTAINER



The container (1) is primarily designed to contain take away foods, is made from sheet metal and has a plastics lid. The top edge of the container is reinforced by rolling to form a bead (10) which passes around the entire circumference of the container. At the bottom (5) of the container is a foot wall (12) which can be received in a complementary portion of the lid. At the top edge portion of the container, are handling lugs (8, 9) which have a low heat capacity. The lid seals to the container and when the lid is fixed to the container the combination may be microwaved.

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FOOD CONTAINER

This invention relates to improvements in and relating to food containers. In particular, but not exclusively, it relates to improvements relating to take-away food containers, often made of aluminium, such as are used by Chinese and Indian take-away restaurants.

Since the invention arose from the problems of aluminium "Chinese take-away" food containers it will be described in relation to them (but has wider applicability). For many years now take-away food has been sold in aluminium trays or dishes which have a flexible flange at the upper edge regions of their side walls, the flexible flange being folded over a flat cardboard lid to hold the lid to the aluminium dish. To open a closed container the user must prize up the folded-down flange, whilst the dish is hot, and remove the cardboard lid. It is not unknown for a user to cut himself on the exposed edge of the aluminium flexible flange. It is not unknown for the user to burn himself, for example by trying to hold the hot dish steady with one hand whilst trying to pick the folded-down flange open with the other hand, said one hand being burned by the hot aluminium dish in the process, or by accidentally pushing down the cardboard lid whilst trying to lift the flange away from the lid and pushing his finger into the hot food. Users do burn themselves, or at least hurt their fingers, by picking up the hot aluminium dishes when they are full of hot food. They need to be picked up to pour their contents onto a plate.

Furthermore, when the customer gets home he often wants to re-heat the take-away food because it has

cooled during transit. It is now common to microwave the food, but because it is not allowed to microwave an aluminium container (because of the danger of arcing) the user decants the food into a ceramic, china or plastics material container for heating. This can waste food and increases the amount of dirty dishes that need cleaning. It is also one more opportunity to spill something.

A further consideration with take-away containers is that they are not very good at retaining liquid sauces which surround food, such as curries. It is not unknown for a customer to drive home from a take-away restaurant with his take-away containers in a bag on the floor of his car just in case the sauce leaks past the aluminium flange (and it often does). This can damage upholstery, and clothing, if the leakage is severe.

Up until now it has simply been accepted that the problems discussed are simply part and parcel of having a take-away meal.

It is the aim of this invention to address at least some of the problems discussed and at least partially to alleviate some of the problems.

According to a first aspect of the invention we provide a food container comprising a body portion adapted in use to hold food, and at least one handling lug.

The handling lug enables the food container to be picked up and manipulated without the need to hold side walls of the body portion.

Preferably the container is made of metal, most preferably aluminium. The container is preferably made of sheet material. The container may be pressed-formed, or stamp formed.

There are preferably at least two handling lugs, which are most preferably diametrically opposite each other. The handling lug, or lugs, preferably extend away from side walls of the body portion, and is/are preferably provided at the top of the side walls.

The handling lugs preferably have such a small heat capacity that they cool to a touchable temperature (to the human finger) within moments of the container being heated (either by re-heating the container with food in it, or by being heated by the introduction of hot food into the container). Indeed, the handling lugs may never in use rise to an uncomfortable temperature - they may always be relatively cool. The heat capacity of the lugs is low enough that in use they do not feel hot to the user.

The touchable temperature may vary from person to person according to their sensitivity to temperature. But, the touchable temperature will be such that a person can comfortably hold the lugs.

The time it takes for the lugs to reach the touchable temperature may vary according to the temperature the container reaches in the microwave. Within moments is not more than at least 30 seconds, preferably 15 seconds, or 10 seconds or not more than 5 seconds, or even 2 or 1 seconds.

The handling lug(s) are stiff enough, and strong enough, to enable the (full) container to be picked up

by a user using them. They may have stiffening means to stiffen them. The stiffening means may comprise folding, or crinkling, the sheet material so as to produce a non-flat cross-section. Alternatively or additionally a bead may be provided on the lugs which serves at least in part to stiffen the lugs. The stiffening bead may be provided at the peripheral edge of the lugs. Preferably a stiffening bead is also provided around the top edge of the body portion. The body portion stiffening bead and the handling lug stiffening bead may be contiguous.

The bead may be formed by rolling a region of the sheet material, preferably a peripheral edge region. This not only stiffens the container, but also removes the sharp edge of prior art aluminium take-away containers.

The body portion, or parts of it, may be strengthened by a crinkling or folding of the sheet material to give it a significant depth in cross-section.

According to a second aspect of the invention we provide in combination a food container in accordance with the first aspect of the invention and food held in the body portion.

According to a third aspect of the invention we provide in combination a food container base and a lid sealed to the food container base; the food container base having a side wall with an upper region which extends upwards; and the lid having a downwardly depending sealing wall; the upper region of the side wall serving in use as a sealing region which abuts

said sealing wall of the lid when the lid is in its sealing position relative to the base.

Preferably the upper region and the sealing region are generally parallel when the lid is in its closed condition.

Previously there have been no co-operating generally parallel, generally vertical, sealing faces provided on take-away food containers. We have found that this feature surprisingly increases the angle to which a container plus lid combination can be inclined before fluid leaks out from the seal between the base and the lid from about 10° , in the prior art arrangement to, in our preferred embodiment, about 40° .

In one preferred embodiment the upper region and sealing region extend at lowlized regions generally parallel to each other, but each defines a tapered surface or ring.

Preferably one or both of the upper region of the side wall and the sealing wall of the lid extend around substantially the entire circumference of the container, and most preferably for the entire circumference.

Preferably the base has a flange extending away from the upper region of the side wall. The flange may extend completely, or substantially completely, around the circumference of the base. (The use of "circumference" is not intended to imply that the base is necessarily round, or oval: it could be rectangular or any shape).

Preferably the lid has a complementary flange portion which extends away from the depending wall and, in use, overlies the flange of the base portion.

The face-to-face relationship of the two flanges, as well as the two vertical complementary sealing surfaces, may improve the sealing of the container.

We also seek protection for a container or lid on their own having the necessary features to form a combination in accordance with the third aspect of the invention.

According to a fourth aspect of the invention we provide in combination a food container base and a lid, in which the lid has locating means adapted to locate the base of another container so as to improve the stackability of the containers.

The container base may have foot means adapted to be located by the locating means of a lid.

We also seek protection for a stack of lidded food containers having locating means, and for the lids and bases separately.

According to a fifth aspect of the invention we provide a food container having a metal container base and a spacer means, the spacer means projecting beyond the periphery of the plan projection of the container base and being of a non-metal material, the arrangement of the spacer means being such that in use when the container is heated in a microwave the spacer means prevents the metal container base from contacting a side wall of the microwave, and the spacer means also ensuring that the container base does not get closer to

a side wall of the microwave than a predetermined safety distance.

Thus metal containers can be microwaved after all, if they have the non-metal spacer means to prevent arcing.

The spacer means may comprise a bumper bar extending around substantially all of, or a substantial part of, the circumference of a container base.

The spacer means may be provided directly on the container base, or the container may comprise a metal container base and a non-metal further component attachable to the container base, said further component having said spacer means. The further component may comprise a lid for the container base.

The spacer means may comprise a peripheral skirt, lip, or flange provided on the lid. The spacer means is preferably made of polymer plastics material.

We may provide at least two containers, each having spacer means, with their spacer means arranged such that they prevent the two containers from coming closer together than a predetermined distance. This prevents arcing between containers (if two containers are microwaved simultaneously in the same microwave oven).

According to a sixth aspect of the invention we provide a method of heating take-away food comprising putting the food into a metal container base; providing the metal container base with non-metal spacer means; and microwaving the container base plus food plus spacer means; and arranging for the spacer means to be

such that it prevents the metal container base from getting any closer to a side wall of a microwave oven than a predetermined safety distance which exceeds the distance at which arcing between the metal container and side wall would otherwise occur.

The safety distance may vary from microwave oven to microwave oven (for example more powerful ovens may need larger safety distances).

The safety distance is preferably at least 3mm, most preferably at least 4mm, or at least 5mm. In one preferred embodiment it is about 6mm.

According to a seventh aspect of the invention we provided a food container lid having a sealing formation which in use co-operates with a complementary sealing formation of a container base to seal the lid to the base, the lid also having a fulcrum projection and a lever portion, the arrangement being such that in use a user can with one digit of one hand press down on the fulcrum projection, and with another digit of the same hand press up on the lever portion, thereby in use springing open the connection between the lid and the container base, at least in a region of their engagement.

The container bases, and/or lids, of any of the foregoing aspect of the invention are preferably nestably stackable with other identical bases or lids.

Embodiments of the invention will now be described by way of example only with reference to the accompanying drawings of which:-

Figure 1 shows a take-away food container base;

Figure 2 shows a lid for the container base of Figure 1;

Figure 3 shows in cross-section on line III-III of Figure 1 the profile of the lid of Figure 2 when it is secured to the base of Figure 1;

Figure 4 shows a box in which take-away food containers similar to that of Figure 1 are provided to a customer;

Figure 5 shows a detail of the box of Figure 4;

Figures 6 shows a second embodiment of a take-away food container base; and

figure 7 shows a lid for the container base of Figure 6.

The container 1 has a container base 2 made of sheet aluminium to which can be secured a plastics lid 3.

The base 2 is formed in a dye and has a body portion 4 provided at its lower end with a foot portion 5, and at its upper end with a peripheral flange 6 which extends away from the upper region 7 (see Figure 3) of the body portion 4. The upper region 7 has an annular wall that extends substantially vertically. The peripheral flange 6 surrounds the upper region and extends away from it generally horizontally. Two diametrically opposed handling lugs 8 and 9 are provided and effectively comprise extensions of the peripheral flange 6. A bead 10 is provided around the outer peripheral edge of the flange 6 and the lugs 8 and 9. The bead 10 is formed

by rolling the outer edge of the aluminium foil/sheet material from which the container is made. Figure 3 shows this most clearly. The foot portion 5 has a flat circular base 11 from which extends an annular foot wall 12. The foot wall 12 extends generally vertically.

The material of the container base 2 is crinkled so as to give it greater strength. The rolled bead 10 also gives the container base greater strength.

The container base 2 is such that identical container bases can be nested one inside the other to form a stack, with the handling lugs 8 and 9 on adjacent bases in contact with each other.

The lid 3 is moulded from polyethylene and comprises an annular sealing wall 13, which extends generally vertically, an annular flange surface 14 extending generally horizontally away from the sealing wall 13; a bead-receiving channel 15 provided adjacent the flat surface 14; spacer means 16 provided around the peripheral edge of the lid; a central plateau 17 surrounded by an annular locating ridge 18; and an annular groove 19 defined between the sealing wall 13 and a parallel cylindrical wall 20, there being a groove base wall 21 extending between the two walls 13 and 20.

The lid 3 has ear portions 22 and 23 which are provided to complement, and cooperate with, the handling lugs 8 and 9. The ear portions 22 and 23 also have spacer means 16, which extends completely around the periphery of the lid. The ear portions 22 and 23 each have a raised boss surface which projects upwards away from the bead-receiving channel 15. These boss

projections serve as fulcrum points illustrated with crosses 24, 25, for the opening of the lid of the container (described later).

Notches 26 and 29 are provided in the bosses 22 and 23, and notches 27 and 28 are provided in the annular locating projection 18. These notches effectively comprise openings in the wall 18, and recesses in the bosses 22 and 23. A plastics fork, or other eating utensil, is releasably held in the notches 26 to 29. This is shown in chain-dotted outline in Figure 2. The fork is referenced 30. It is held in place on top of the lid 3 by being a friction fit within the notches 26, 29. Alternatively, the fork may not be provided in the position shown, but instead may be provided loose.

It will be appreciated that the lid 3 is vacuum moulded and has a substantially uniform thickness of sheet material of polypropylene. Identical lids 3 are nestably stackable one within the other in the same way as are the container bases 2.

The spacer means 16 effectively comprises a projecting lip or skirt 31, shown in Figure 3, which surrounds the lid, and in use when the lid is placed on the container base it surrounds the base.

Figure 3 shows the lid 3 sealed to the base 2. The bead 10 is held in the bead-receiving channel 15, which has a semi-circular cross section at its outer region 32 so as to follow the profile of the bead 10. The plastics lid is resilient, at least in the region of the bead-receiving channel, and springs over the bead 10 when the lid is sealed down and holds the bead to prevent the lid from being removed accidentally.

The annular sealing wall 13 engages the annular upper region 7 of the container base. Again the resilience and degree of flexibility of the plastics lid ensures that the annular sealing wall 13 presses against the upper region 7. This provides quite an effective seal between the lid and the container and prevents the egress of sauces and the like to a greater degree than "standard" aluminium containers. Indeed, our tests show that whereas the standard aluminium container can be tipped to 10° before sauce escapes between the fold-over flange holding the container and the cardboard lid, our container can be tipped to an angle of 3 or 4 times this before there is substantial leakage. The "crinkling" of the samples of the container base does not, a little surprisingly, mean that the effective seal between the side walls and the sealing wall 13 is impossible. Curry sauce, and sauces for chinese food, usually have quite a thick consistency. Furthermore, the fact that the flange 6 and the surface 14 overlie each other in close relationship (they may contact each other, or may be slightly spaced apart) also means that they help to form an effective seal because even if they are not resiliently urged together to any substantial extent they nevertheless form a narrow channel which may have a complementary effect. Once again, the viscosity of the liquid food assists. Thus the combination of a vertical sealing surface (or narrow restriction, for example where the sealing surfaces are not in face-to-face contact around the full 360° circumference of the upper region 7) and the 90° bend to the two flange surfaces 6, 14 form a "trap" for liquid food. The viscosity and surface tension of thick sauces helps.

When a take-away meal is transported home from a take-away restaurant it is often the case that it is necessary to have two containers. It will be noted that the foot portion 5 of one container nests in, and in use is located in, the central plateau 17 of the lid of the other container, with the annular locating wall 18 holding the foot portion 5. The depth of the foot portion complements the height of the wall 18. This secures the upper container to the lid of the lower container and helps to reduce spillages. Even if there is some leakage of sauce past the lid of the upper container there is the annular groove 19 which acts as a spill-collection groove provided in the lid of the lower container. This helps to reduce the mess caused by any spillage.

A polyethylene lined paper bag will usually be used to receive the take-away containers. The plastics material lining is impermeable to the sauces and will prevent seepage of the liquid food into the interior of a car, or over the hands or clothes of a customer.

Figure 4 shows a cardboard box that is used by the take-away restaurant to hold several containers 1. The box is provided as a flat-packed box having a standard crash-lock base. When assembled in its carrying condition the box has a base wall, four side walls, and four upwardly sloping leaves 40, 41, 42 and 43. Leaves 40 and 42 meet at a "roof-line" referenced as 44. They also define handles 45, 46 having finger receiving apertures 47. Each of the leaves 40 and 42 has a pair of projections 48 and notches 49 adjacent the projection 48. These are shown best in Figure 5. Each of the leaves 41 and 43 has a slot 50 through which, in use, projections 48 extend so as to lock the leaves 40 to 43 in a closed condition. To open the box

the user lifts the leaves 41 and 43 over the projections 48 so as to enable the leaves 40 and 42 to fold outwards. It will be appreciated that this box has a "roof-space" which could be used to receive small items, such as condiments, cutlery, napkins or a bag of prawn crackers or the like. Indeed in this preferred embodiment all of the items recited are provided in this space above containers 1. The box is deep enough to receive two layers of containers 1 within the height of the side walls.

When the customer gets home with his take-away meal he opens the container 1 by placing his thumb on the boss 24, 25, and his finger on a lever portion, referenced 60 and 61, of the spacer means 16 in the region of the ear portions 22, 23. He then presses down with his thumb and lifts up with his finger so as to spring the ear portion of the lid over the bead 10 in the region of the handling lugs 8 and 9. This serves to provide an easy start to opening the container.

The handling lugs 8 and 9 (and when the lid is attached the ear portions 22 and 23) enable the user to pick up the container easily, by the handling lugs 8 and 9. This avoids the user having to hold the side walls of the container, and prevents him from burning himself.

The user can re-heat his take-away food in his microwave despite traditional thoughts that it is not possible to microwave in aluminium containers. Our container is microwavable. The user ensures that the lid is on the container base and can then microwave the combined container base plus lid. The spacer means 16 of the lid ensures that the aluminium container base 2

cannot get too close to the walls of the microwave thereby preventing arcing. Similarly, two containers in the same microwave will be kept a safe distance apart by their skirts 31 which are provided at the same height and so contact each other when two containers are moved towards each other.

We may choose to have venting apertures in the lid to allow steam to escape when microwaving food.

Because our lid seals so well to the container base, and easily, our container can be re-sealed after it has been opened quickly and easily. Furthermore, our container is suitable for freezing. The user may freeze whatever food he does not eat and re-heat it another time. Indeed, the user may decide to clean out the container and lid and keep them for either microwaving other food, or as a container for freezing other food. Thus the customer gets a re-useable and re-sealable container. It will be noted that our rolled edge minimises the chances of a customer cutting his fingers, as he previously could do with the raw edge of a prior art aluminium food container.

In another embodiment we may prefer to coat the inside of our container bases with a lacquer. The lacquer may have organic compositions.

A further modification is that instead of having an upper portion 7 that is generally vertical we may have a tapering ring portion at the upper region. The taper may be narrower towards the lower part of the taper region. The sealing wall 13 may then also taper in the same way. The angle of taper may be about 5 to 10°. The taper may assist in ensuring that the tapering ring and tapering sealing wall 13 are urged

together for better sealing. A resilient material lid assists this. The arrangement of the bead may ensure that the taper wall of the lid is urged against the taper region of the container base.

Figures 6 and 7 show a base and lid of a second embodiment of the invention. In these figures the reference numerals refer to similar parts to those of Figures 1 and 2. The device is similar in operation to the first embodiment. The distinguishing feature between the two embodiments is the shape. The second embodiment being oval in shape, while the first embodiment is round.

CLAIMS

1. A food container comprising a body portion adapted in use to hold food, and at least one handling lug.
2. A food container according to claim 1, wherein the container is made from sheet material.
3. A food container according to claim 1 or claim 2, wherein the container is made from metal.
4. A food container according to claim 3, wherein the metal is aluminium.
5. A food container according to any preceding claim, wherein there are at least two handling lugs.
6. A food container according to claim 5, wherein there are two handling lugs diametrically opposite each other.
7. A food container according to any preceding claim, wherein the handling lug, or lugs, is/are provided at the top region of the side walls.
8. A food container according to any preceding claim, wherein the handling lugs have such a small heat capacity that they cool to a touchable temperature within moments of the container being heated or re-heated.
9. A food container according to any preceding claim, wherein the handling lugs have stiffening means to stiffen them.

10. A food container according to claim 9 as it depends from claim 2, wherein the stiffening means comprises folding or crinkling.

11. A food container according to claim 9 or claim 10, wherein the stiffening means comprises or further comprises a bead.

12. A food container according to any preceding claim, wherein a stiffening bead is provided at the top edge region of the body portion.

13. A combination of a food container according to any of claims 1 to 12 and food held in the body portion.

14. A combination of a food container base and a lid sealed to the food container base, the food container base having a side wall with an upper region which extends upwards, the lid having a downwardly depending sealing wall and the upper region of the side wall serving in use as a sealing region which abuts said sealing wall of the lid when the lid is in its sealing position relative to the base.

15. A combination according to claim 14, wherein the upper region and the sealing region are generally parallel when the lid is in its closed condition.

16. A combination according to claim 15 or claim 16, wherein the side wall and the sealing wall of the lid extend around substantially the entire circumference of the container.

17. A combination according to any of claims 14 to 16, wherein a flange extends away from the upper region of the side wall of the base.

18. A combination according to claim 17, wherein the lid has a complementary flange portion which extends away from the depending sealing wall and, in use, overlies the flange of the base portion.

19. A lid for a food container having a downwardly depending sealing wall.

20. A combination of a food container base and a food container lid wherein the lid has locating means to locate the base of another container so as to improved the stackability of the containers.

21. A combination according to claim 21, wherein the food container base has foot means adapted to be located by the locating means of the lid.

22. A lid for a food container having locating means.

23. A food container having a metal container base and a spacer means, the spacer means projecting beyond the periphery of the plan projection of the container base and being of a non-metal material, the arrangement of the spacer means being such that in use when the container is heated in a microwave the spacer means prevents the metal container base from contacting a side wall of the microwave, and the spacer means also ensuring that the container base does not get closer to a side wall of the microwave than a predetermined safety distance.

24. A food container according to claim 23, wherein the spacer means is provided directly on the container base.

25. A food container according to claim 23, wherein the spacer means is provided on a lid for the container base.

26. A food container according to claim 25, wherein the spacer means comprises a skirt, lip or flange provided on the lid.

27. A food container according to any of claims 23 to 26, wherein the spacer means is polymer plastics.

28. A method of heating take away food comprising putting the food into a metal container base, providing the metal container base with non-metal spacer means, and microwaving the container base, with food and said spacer means and arranging for the spacer means to be such that it prevents the metal container base from getting any closer to a side wall of a microwave oven than a predetermined safety distance which exceeds the distance at which arcing between the metal container and side wall would otherwise occur.

29. A method according to claim 28, wherein the safety distance is at least 3mm.

30. A method according to claim 28 or claim 29, wherein the safety distance is 6mm.

31. A food container lid having a sealing formation which in use co-operates with a complementary sealing formation of a container base to seal the lid to the base; the lid also having a fulcrum projection and a lever portion, the arrangement being such that in use a user can with one digit of one hand press down on the fulcrum projection, and with another digit of the same hand press up on the lever portion, thereby in use

springing open the connection between the lid and the container base, at least in a region of their engagement.

32. A food container as described herein with reference to the accompanying drawings.

33. A lid for a food container as described herein with reference to the accompanying drawings.

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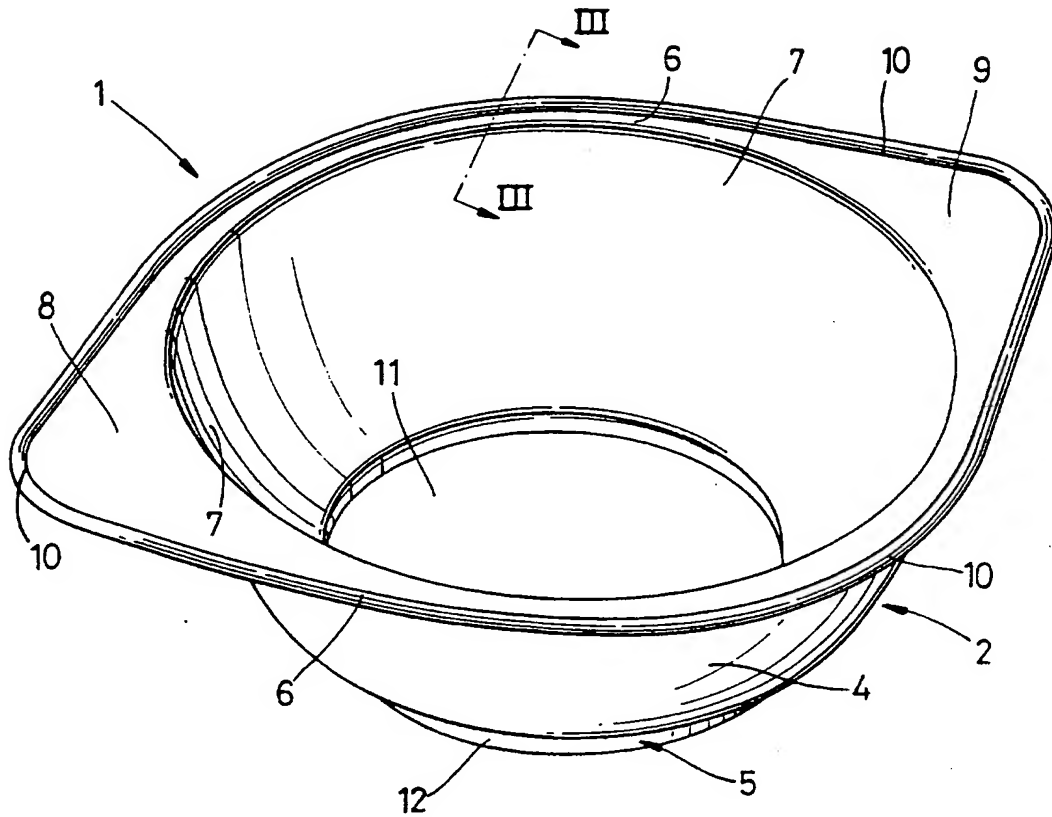


Fig. 1

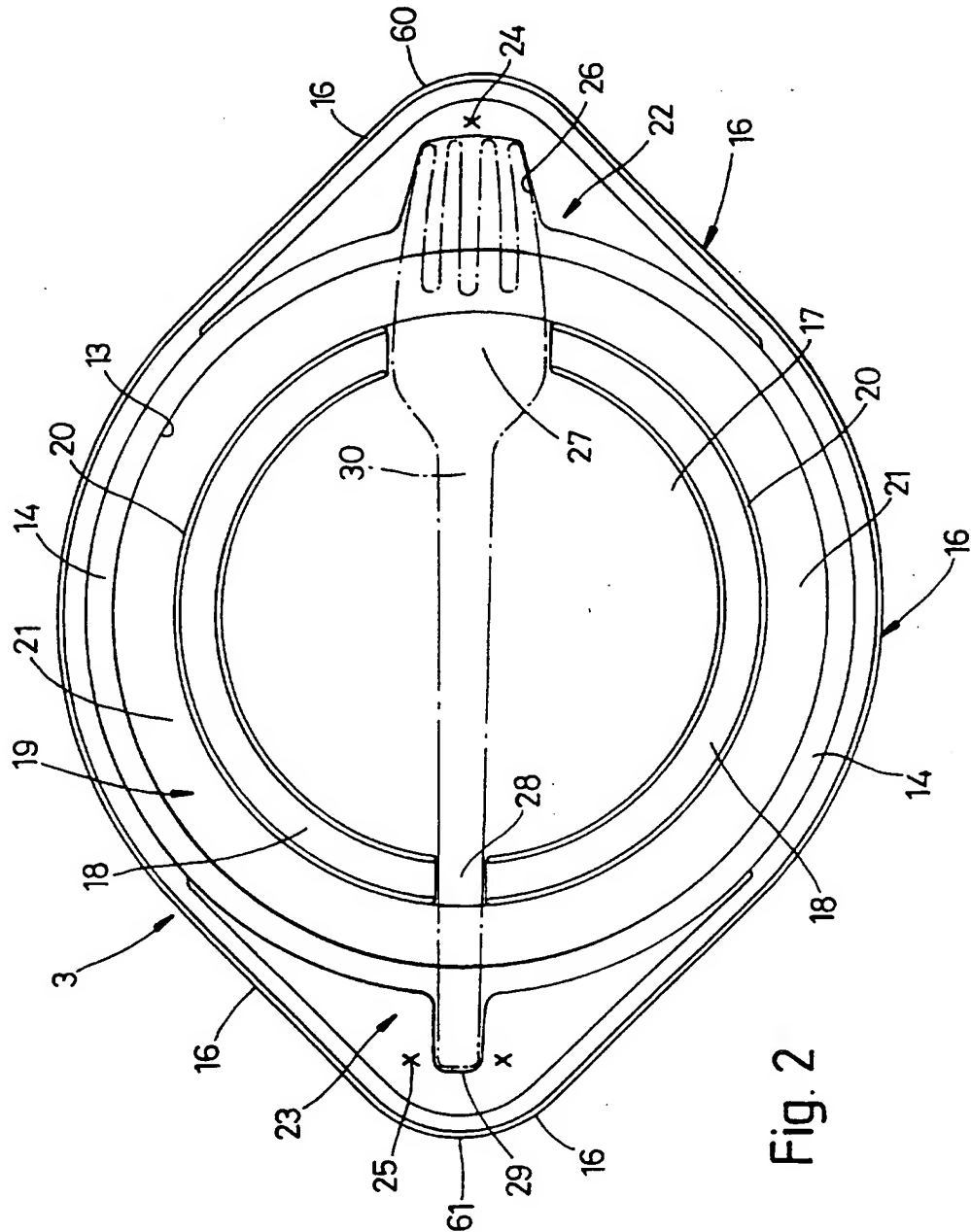


Fig. 2

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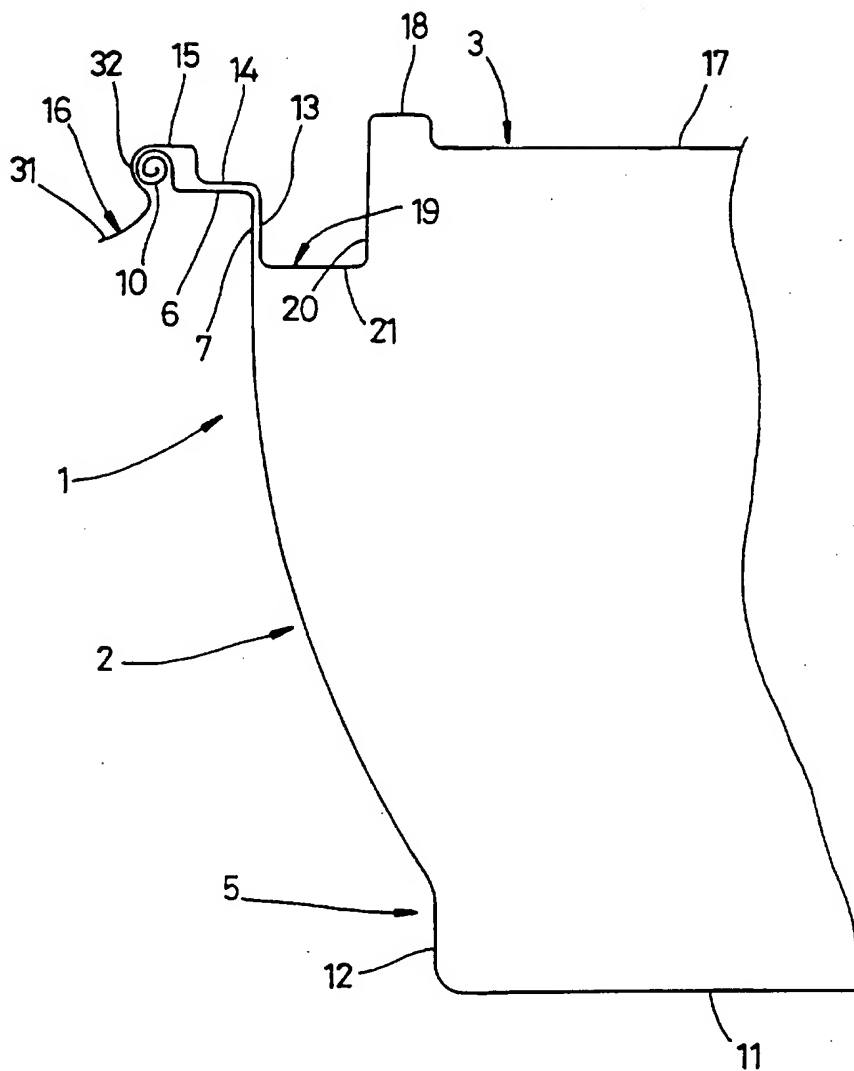


Fig. 3

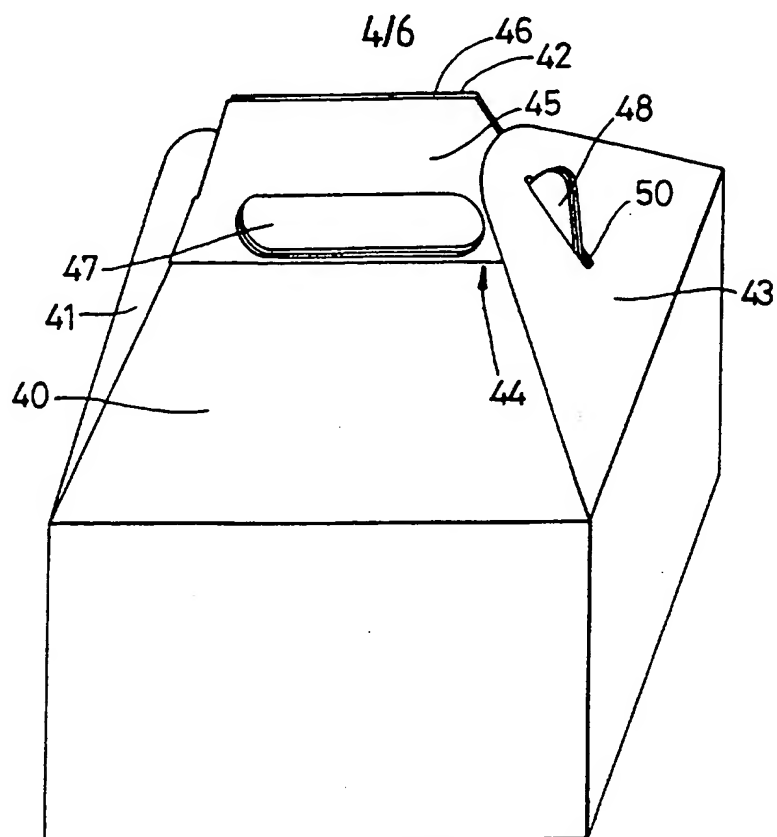


Fig. 4

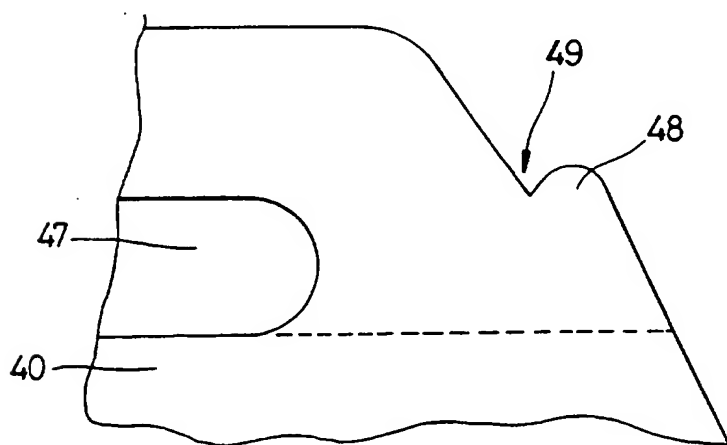
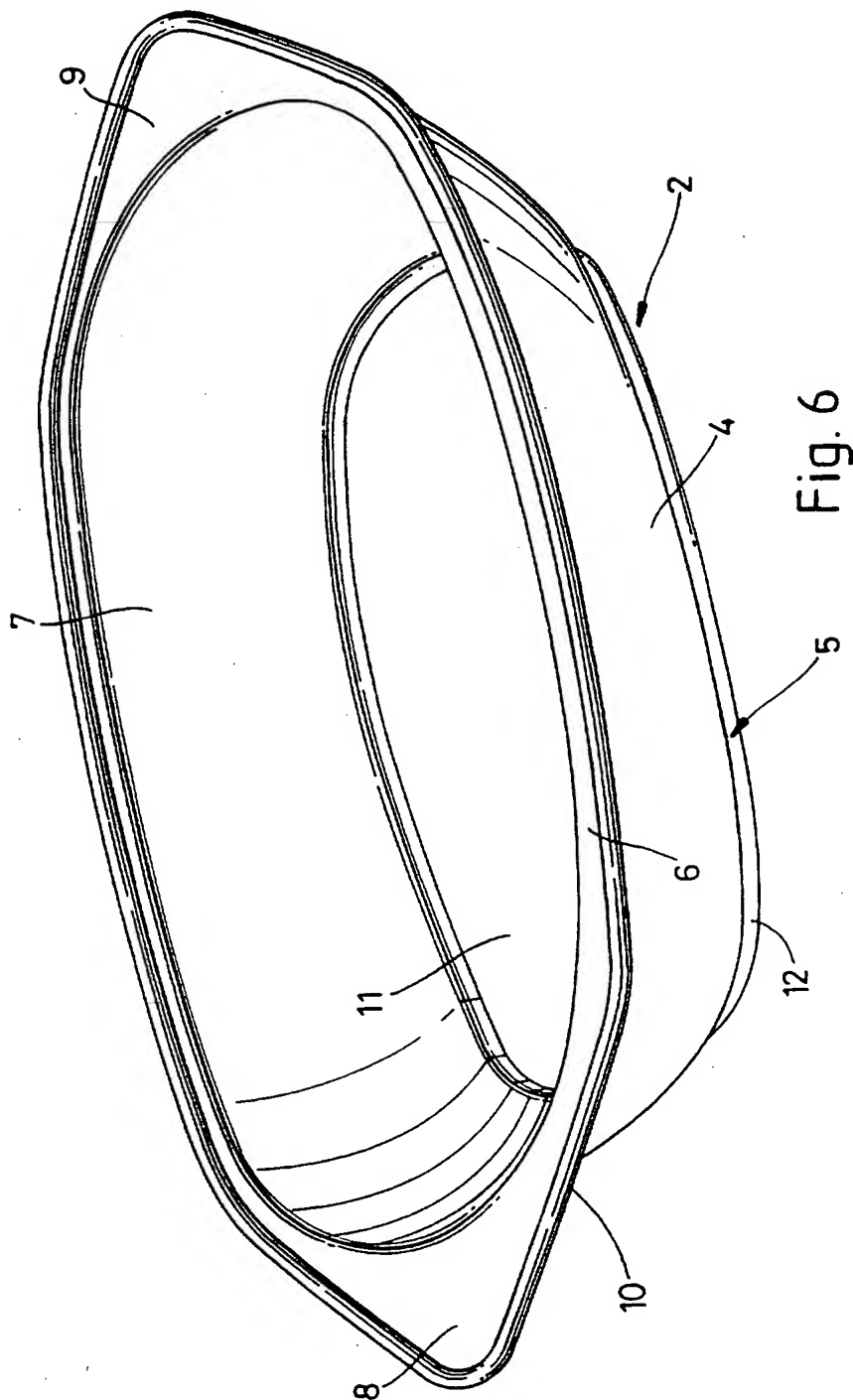


Fig. 5

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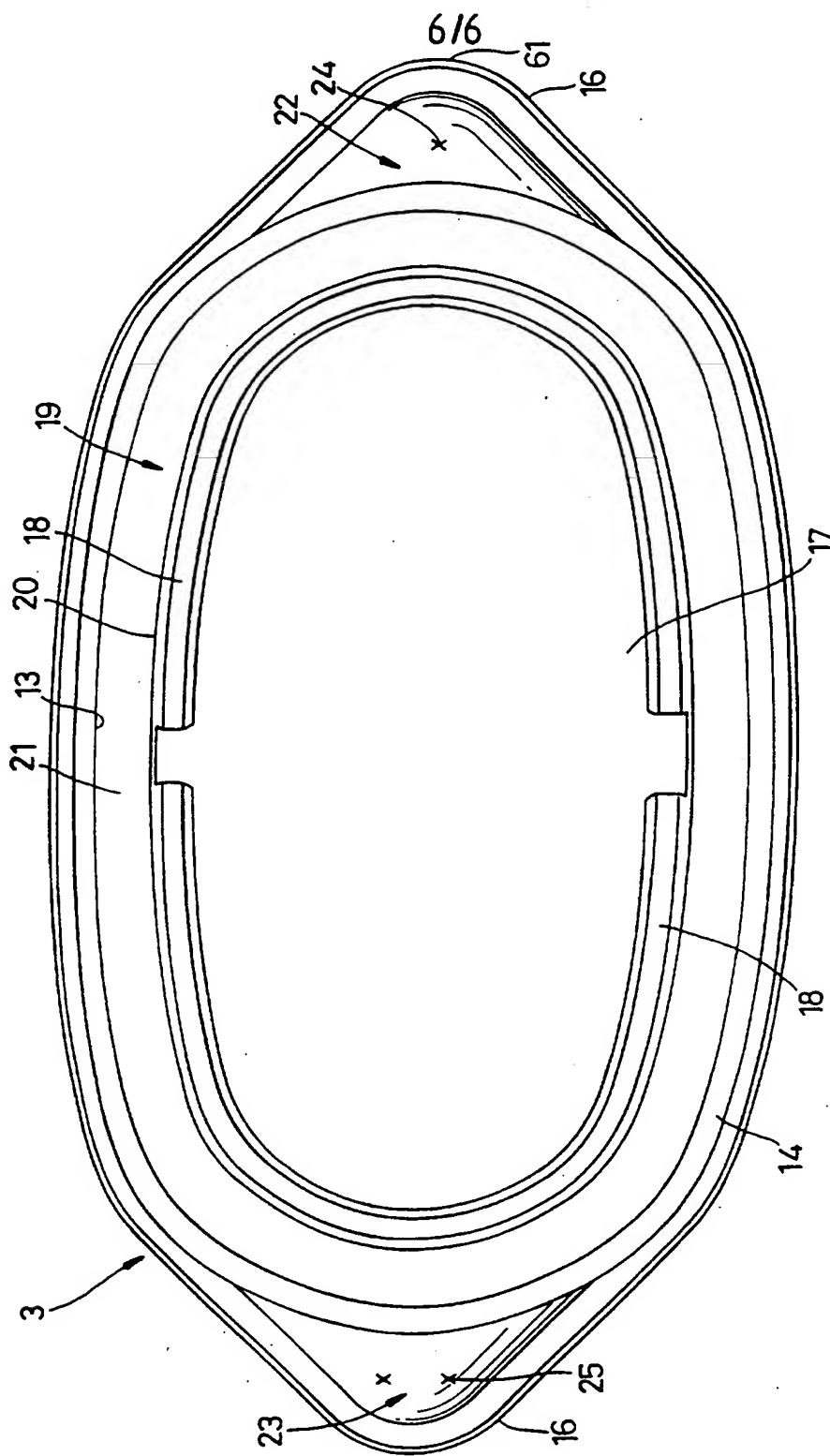


Fig. 7

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